

# Intracolony variation in behaviour and biting performance in a social mole-rat (*Fukomys*, Bathyergidae, Rodentia).

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This study provides a critical assessment of the methodology for recording and analysing the social structure in mole-rat colonies. In addition, the relation between social structure and biting performance in a bathyergid species was investigated. Behavioural observations were carried out on a colony of wild-caught *Fukomys micklemi*, in order to test for the existence of different worker castes. Both experimental setup (glass tank versus tunnel system) and behavioural parameters (duration versus frequency of work behaviour) were compared. Daily activity patterns were determined using a 24-hour observation routine. Maximal bite force was measured and related to morphological and behavioural parameters. Results show that mole-rat social behaviour should be studied using a tunnel system, which increases the resolution between individual behavioural patterns. To avoid any temporal bias as a result of interindividual variation in activity patterns, observations should be carried out over a 24-hour period. Finally, scoring frequencies is a valuable alternative to the labour-intensive scoring of durations. Although considerable interindividual variation in the amount of work was apparent within the colony, no clear worker castes could be defined. We hypothesize that colonies of *F. micklemi* have a dynamically changing social structure, showing interindividual variation in developmental patterns and in the ratios of different types of work behaviour. As such, a subdivision of the non-reproductive caste is a subjective interpretation of a continuous variation in work behaviour. Whereas differences in biting performance were strongly correlated with morphological parameters, no relation between work and biting performance was found.